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REMARKS

In the present Amendment, claim 35 has been canceled and claims 16, 19, and 20 have been amended. Thus, claims 16-20, 22-30, and 36-38 are pending.

Election/Restriction

The claims as amended herein are directed to the elected invention.

35 U.S.C. § 112, first paragraph

The claims remain rejected as purportedly not being described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Applicants continue to respectfully traverse this rejection.

At the outset, it should be apparent to one skilled in the art, based on the teachings in the application, that the nucleotide sequence of SEQ ID NO:9 encodes a full-length polypeptide, i.e., the polypeptide of SEQ ID NO:10, and that the full-length polypeptide of SEQ ID NO:10 has disulfide isomerase activity. As taught in the specification, the amino acid sequence of SEQ ID NO:10 is homologous to known disulfide isomerases from *Chlamydomonas reinhardtii* and *Arabidopsis thaliana* (NCBI General Identifier Nos. 2708314 and 4678297). In addition, the amino acid sequence of SEQ ID NO:10 contains the two conserved active site domains (WCGHC) (positions 114-118 and 459-463) that regulate the formation, reduction, and isomerization of disulfide bonds involved in protein folding, as well as an endoplasmic reticulum retaining signal (KDEL). The Response submitted September 24, 2001 noted the two conserved active site domains and the numerous references cited in the specification characterizing protein disulfide isomerases. To provide yet further evidence, Applicants note that the two conserved active site domains, responsible for disulfide isomerase activity, are taught (as CGHC rather than WCGHC) by K. Vuori et al., "Expression and Site-directed Mutagenesis of Human Protein Disulfide Isomerase in *Escherichia coli*" The Journal of Biological Chemistry, Vol. 267, No. 11, April 15, pp. 7211-7214, 1992 (enclosed herewith).

Further, it should be apparent to one skilled in the art that the claimed invention is described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. With respect to claim 16, the specification reasonably conveys Applicants' possession of isolated polynucleotides comprising a nucleotide sequence encoding a polypeptide that (i) has disulfide isomerase activity and (ii) has at least 85% identity to SEQ ID NO:10. In the specification, Applicants provide the full-length disulfide isomerase of SEQ ID NO:10, the two conserved active site domains (WCGHC) necessary for disulfide isomerase activity, and means for calculating amino acid sequences that have at least 85% identity to SEQ ID NO:10. It is submitted that the specification contains a written description of the subject matter of claim 16, as well as the other claims.

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The claims were also rejected as purportedly containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to make and/or use the invention. That rejection is respectfully traversed.

Applicants are confused by the statements in the Office Action at page 5, second and third sentences, concerning the minimum sequences or domain constraints required to maintain PDI activity and be free of the prior art. An assessment of being "free of the prior art" is not relevant in determining whether the claimed subject matter is enabled by the specification.

The application does indeed fully enable any person skilled in the art to make and use the invention. With respect to claim 16, the specification enables one skilled in the art to make polynucleotides comprising a nucleotide sequence encoding a polypeptide that (i) has disulfide isomerase activity and (ii) has at least 85% identity to SEQ ID NO:10. One skilled in the art can determine, without undue experimentation, whether a polynucleotide falls within the scope of claim 16 by simply comparing the amino acid sequence encoded by this polynucleotide with the amino acid sequence of SEQ ID NO:10, and by transforming cells with an expression cassette containing the polynucleotide and assaying the transformed cells for disulfide isomerase activity. Although these tasks may be time consuming, they do not defeat patentability. It is submitted that claim 16 and the other pending claims are fully enabled.

In addition, Applicants appreciate the indication that "Applicants are enabled for the scope drawn to the polynucleotide of SEQ ID NO: 9, encoding the functional polypeptide of SEQ ID NO: 10." (See, Office Action at page 5, fourth complete sentence.) It is noted that claim 20, which depends from claim 16, is drawn to a polynucleotide comprising the nucleotide sequence of SEQ ID NO:9 that encodes the polypeptide of SEQ ID NO:10. Accordingly, the Office Action acknowledges that claim 20 is enabled by the specification.

It is believed that the rejections under 35 U.S.C. § 112, first paragraph have been overcome. Withdrawal of these rejections is requested.

Conclusion


In view of the amendments and remarks above, Applicants respectfully submit that the application is in condition for allowance. The Examiner is invited to contact the undersigned if there are any questions concerning the prosecution of this application.

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The Commissioner is authorized to charge Deposit Account No. 04-1928 (E. I. du Pont de Nemours and Company) for any fees necessitated by this response.

Respectfully submitted,



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VERSION WITH MARKING TO SHOW CHANGES MADE

In showing the changes, deleted material is shown in brackets, and inserted material is shown underlined.

IN THE CLAIMS:

16. "twice amended" An isolated polynucleotide comprising:

(a) a nucleotide sequence encoding a polypeptide having disulfide isomerase activity, wherein the amino acid sequence of the polypeptide and the amino acid sequence of SEQ ID NO:[8,] 10[, or 16] have at least 85% identity, or

(b) the complement of the nucleotide sequence, wherein the complement and the nucleotide sequence contain the same number of nucleotides and are 100% complementary.

19. "twice amended" The polynucleotide of Claim 16 wherein the [polynucleotide encodes a] polypeptide [selected from the group consisting] comprises the amino acid sequence of SEQ ID NO[s]:[8,] 10[, and 16].

20. "twice amended" The polynucleotide of Claim 16 wherein the polynucleotide comprises [a] the nucleotide sequence [selected from the group consisting] of SEQ ID NO[s]: [7,] 9[, and 15].

35. "canceled"